



Eu-142 (70.2s) ECB+	Eu-143 (4.47m) ECB+	Eu-144 (23.0m) ECB+	Eu-145 (48.27d) EC	Eu-146 (38.1h) ECB+	Eu-147 (74.6y) A
Eu-143 (2.59m) ECB+	Eu-144 (1.0) ECB+	Eu-145 (5.93d) ECB+	Eu-146 (4.61d) ECB+	Eu-147 (24.1d) ECB+A	Eu-148 (1.03E+8y) A
Sm-139 (2.57m) ECB+	Sm-140 (14.82m) ECB+	Sm-141 (10.2m) ECB+	Sm-142 (8.75h) ECB+	Sm-143 (STABLE) EC	Sm-144 (340d) EC
Sm-145 (1.03E+8y) A	Sm-146 (1.03E+8y) A	Sm-147 (1.03E+8y) A	Sm-148 (1.03E+8y) A	Sm-149 (1.03E+8y) A	Sm-150 (1.03E+8y) A

EUROPIUM-143

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Eu-143
Atomic number (Z): 63
Mass number (A): 143
Neutron number (N): 80

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 2.59 [m]
Decay constant: 4.4604e-03 [1/s]
Daughters: Sm-143 (99.9%), Sm-143m (0.121%)
Radioactive daughters: Sm-143, Sm-143m

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 1.36757 [MeV]
Mean photon energy: 1.12268 [MeV]
Air kerma rate constant, Γ_{10} : 1.224e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 4.096e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.191e-13 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

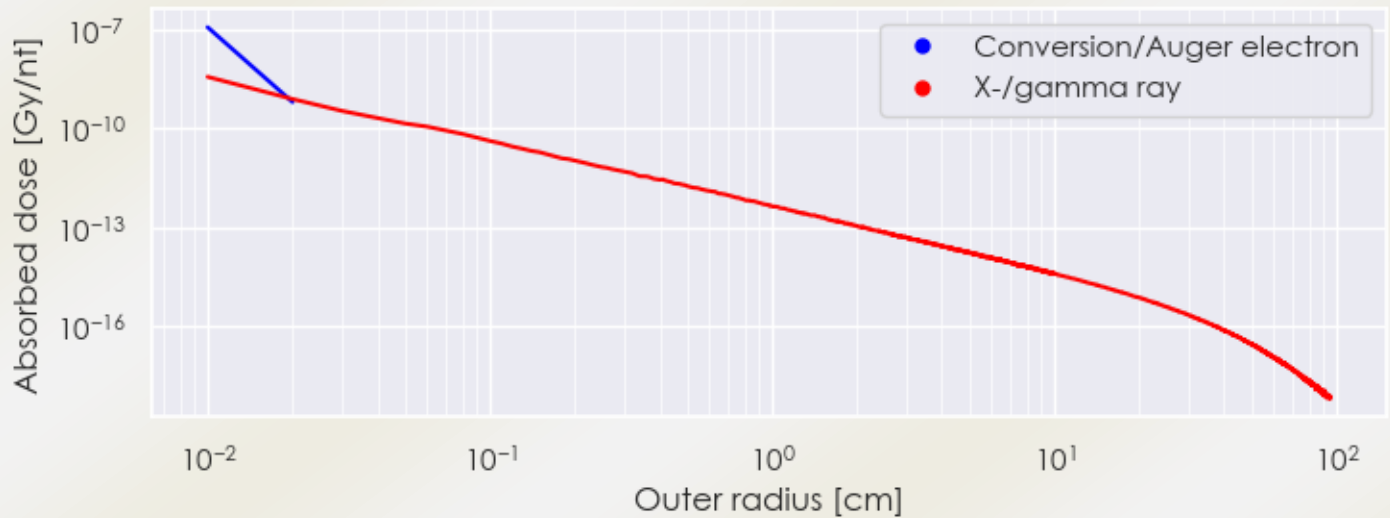
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.191×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.799×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

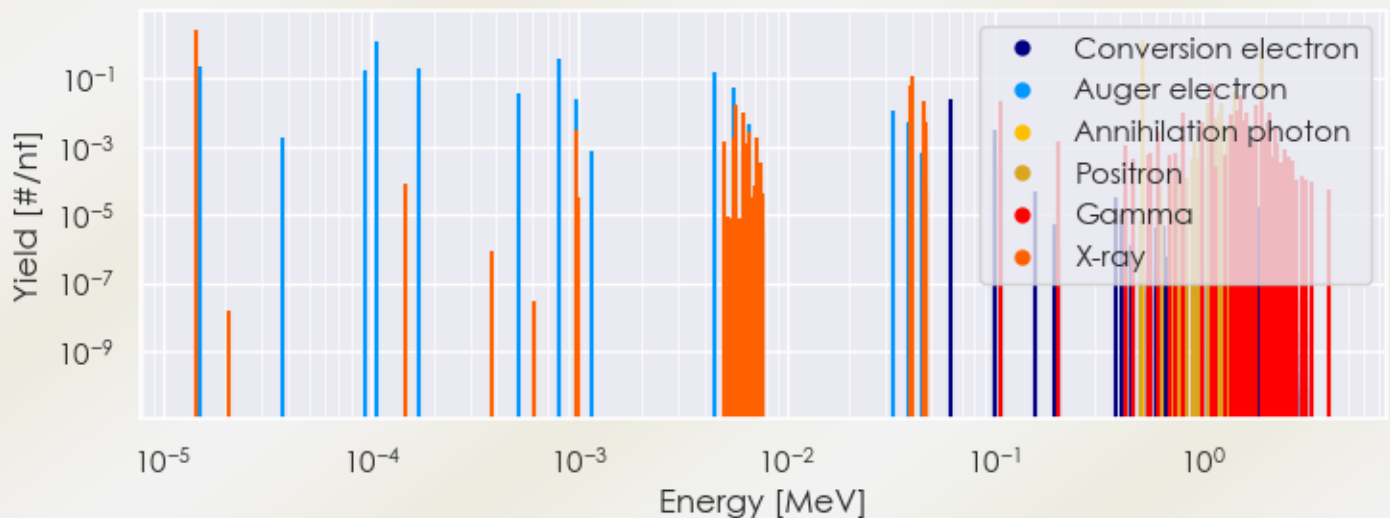
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Eu-143 DPK.csv

SUMMARY SPECTRA (PLOT)

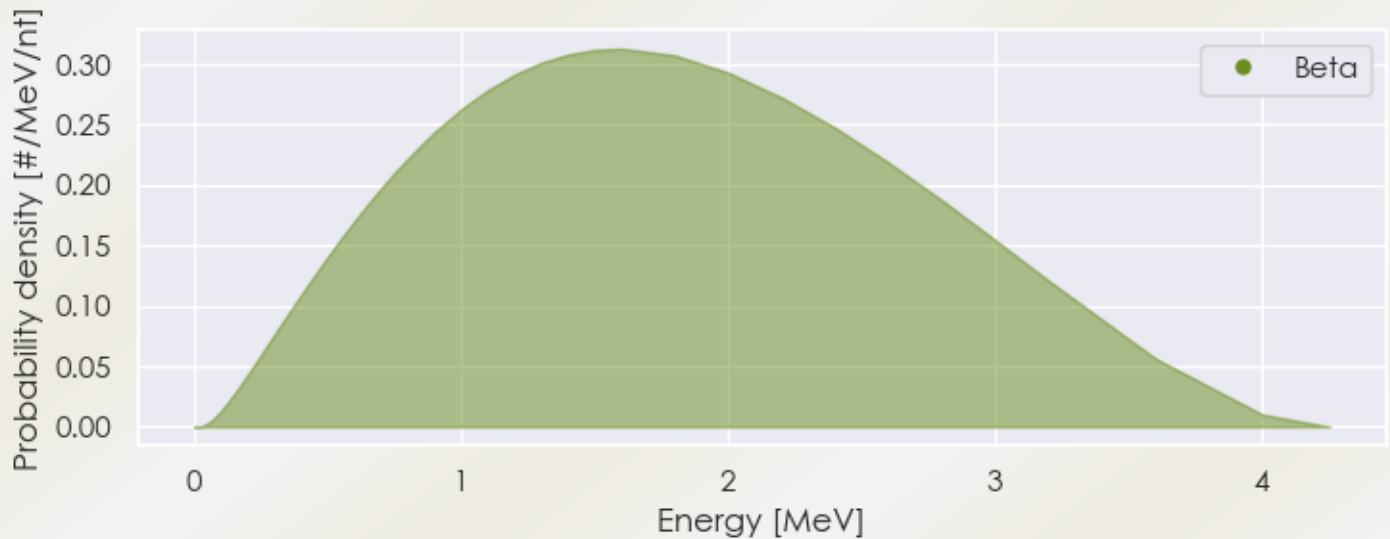
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Eu-143 Summary Spectrum.csv

BETA SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated beta spectra file here: www.mirdsoft.org/products/MIRDspecs/Eu-143 Beta Spectrum.csv

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Eu-143 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.45263e-05	2.813e+00	X-ray
5.62210e-03	1.658e-02	X-ray
6.20531e-03	1.048e-02	X-ray
3.95578e-02	6.481e-02	X-ray
4.01680e-02	1.173e-01	X-ray
4.53441e-02	1.176e-02	X-ray
4.54683e-02	2.274e-02	X-ray
1.07690e-01	2.092e-02	Gamma
5.11000e-01	1.483e+00	Annihilation photon
8.05300e-01	1.005e-02	Gamma

1.10730e+00	7.500e-02	Gamma
1.45840e+00	1.162e-02	Gamma
1.53680e+00	3.293e-02	Gamma
1.60730e+00	1.013e-02	Gamma
1.80490e+00	1.665e-02	Gamma
1.91270e+00	2.130e-02	Gamma
1.05624e+00	2.020e-02	Positron
1.22805e+00	1.970e-02	Positron
1.42603e+00	4.031e-02	Positron
1.94277e+00	6.302e-01	Positron
1.51033e-05	2.201e-01	Auger electron
9.42586e-05	1.800e-01	Auger electron
1.06714e-04	1.176e+00	Auger electron
1.68898e-04	1.877e-01	Auger electron
5.08330e-04	3.689e-02	Auger electron
8.03746e-04	4.036e-01	Auger electron
9.73751e-04	2.584e-02	Auger electron
4.45728e-03	1.504e-01	Auger electron
5.50727e-03	5.140e-02	Auger electron
3.25196e-02	1.119e-02	Auger electron
6.08140e-02	2.479e-02	Conversion electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6